

## CLAIMS

- [1] A projector color correcting method comprising:  
a color conversion generation step for generating a color conversion for each of the pixels or blocks of an image projected onto a projection plane based on previously set first color information and second color information on the image projected onto the projection plane; and  
5 a color correction step for correcting an input image for colors on a pixel-by-pixel or block-by-block basis using the color conversion.
- [2] The projector color correcting method according to claim 1, wherein said color conversion generation step comprises:  
an input step for receiving an input through a user interface; and  
a conversion step for generating the color conversion based on  
5 the input.
- [3] The projector color correcting method according to claim 1, wherein said color conversion generation step comprises:  
a color information acquisition step for acquiring the second color information as color information for each pixel or block of the image on the  
5 projection plane; and  
a color conversion calculation step for calculating a color conversion for each pixel or block of the image based on the first color information and the second color information.
- [4] The projector color correcting method according to claim 1, wherein said color conversion generation step comprises:

an association step for projecting the image onto the projection plane, and capturing the image to acquire a captured image for establishing  
5 an association between pixels or blocks of the image and pixels or blocks of the captured image;

a color information acquisition step for acquiring the second color information as color information for each pixel or block of the captured image; and

10 a color conversion calculation step for calculating a color conversion for each pixel or block of the image based on the first color information, the second color information, and said association.

[5] The projector color correcting method according to claim 1, wherein said color conversion generation step comprises:

an association step for projecting a pattern image onto the projection plane, and capturing the pattern image to acquire a captured  
5 pattern image for establishing an association of pixels or blocks of the pattern image with pixels or blocks of the captured pattern image;

a color information acquisition step for projecting a color image onto the projection plane, capturing the color image to acquire a captured color image, and acquiring the second color information as color information  
10 for each pixel or block of the captured color image; and

a color conversion calculation step for calculating a color conversion for each pixel or block of the color image based on the first color information, the second color information, and said association.

[6] The projector color correcting method according to claim 4,

including presenting a plurality of the images or the pattern images, acquiring an associated captured image as a captured image associated with the plurality of images, and scanning the associated captured image to establish  
5 an association of the pixel or block of the image or pattern image with the pixels or blocks of the captured image or captured pattern image.

[7] The projector color correcting method according to claim 1, wherein said color conversion generation step comprises:

a feature point association step for projecting a pattern image onto the projection plane, capturing the pattern image to acquire a captured  
5 pattern image for establishing an association of feature points of the pattern image with feature points of the captured pattern image;

a feature point color information acquisition step for projecting a color image onto the projection plane, capturing the color image to acquire a captured color image, and acquiring the second color information as color  
10 information on the feature points of the captured color image;

a feature point color conversion calculation step for calculating a color conversion for the feature points of the color image from the previously set first color information, the second color information, and said association; and

15 a color conversion calculation step for calculating a color conversion for each pixel or block of the input image by using the color conversion for the feature points as a color conversion for representative points.

[8] The projector color correcting method according to claim 1,

wherein said color conversion comprises an equation or a lookup table or a combination thereof.

[9] A projector color correcting apparatus comprising:

a color conversion generation unit for generating a color conversion for each of pixels or blocks of an image projected onto a projection plane based on previously set first color information and second

5 color information on the image projected onto the projection plane; and

a color correction unit for correcting an input image for colors on a pixel-by-pixel or block-by-block basis using the color conversion.

[10] The projector color correcting apparatus according to claim 9, wherein said color conversion generation unit comprises a conversion unit for generating the color conversion based on input through a user interface.

[11] The projector color correcting apparatus according to claim 9, wherein said color conversion generation unit comprises:

an association unit for acquiring a captured image generated by capturing the image projected onto the projection plane to establish an association between pixels or blocks of the image and pixels or blocks of the

5 captured image;

an association storage memory for recording the association;

a color information acquisition unit for acquiring the second color information as color information for each pixel or block of the captured image;

10 a color conversion calculation unit for calculating a color conversion for each pixel or block of the image based on the first color

information, the second color information, and said association; and  
a color conversion storage memory for recording the color  
conversion.

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[12] The projector color correcting apparatus according to claim 9,  
wherein said color conversion generation unit comprises;

an association unit for acquiring a captured pattern image  
generated by capturing a pattern image projected onto the projection plane to  
5 establish an association of pixels or blocks of the pattern image with pixels or  
blocks of the captured pattern image;

an association storage memory for recording the association;

a color information acquisition unit for capturing a captured color  
image generated by capturing a color image projected onto the projection  
10 plane to acquire the second color information as color information for each  
pixel or block of the captured color image;

a color conversion calculation unit for calculating a color  
conversion for each pixel or block of the color image based on the first color  
information, the second color information, and said association; and

15 a color conversion storage memory for recording the color  
conversion.

[13] The projector color correcting apparatus according to claim 11,  
wherein said association unit presents a plurality of the images or pattern  
images, acquires an associated captured image as a captured image  
associated with the plurality of images, and scans the associated captured  
5 image to establish an association of the pixel or block of the image or pattern

image with the pixels or blocks of the captured image or captured pattern image.

[14] The projector color correcting apparatus according to claim 9, wherein said color conversion generation unit comprises:

a feature point association unit for capturing a captured pattern image generated by capturing a pattern image projected onto the projection plane, and establishing an association of feature points of the pattern image with feature points of the captured pattern image;

an association storage memory for recording said association;

a feature point color information acquisition unit for acquiring a captured color image generated by capturing a color image projected onto the projection plane, and acquiring the second color information as color information on the feature points of the captured color image;

a feature point color conversion calculation unit for calculating a color conversion for the feature points of the color image from the previously set first color information, the second color information, and said association;

a color conversion storage memory for recording the color conversion for the feature points as a color conversion for representative points; and

a color conversion calculation unit for calculating a color conversion for each pixel or block of the input image from a color conversion for the representative points.

[15] The projector color correcting apparatus according to claim 9, wherein said color conversion comprises an equation or a lookup table or a

combination thereof.

[16] A projector comprising:

the projector color correcting apparatus according to claim 9 for generating image data corrected for colors based on the image data applied thereto; and

5 a projector main body for projecting the image data corrected for colors onto a projection plane.

[17] A program for causing a computer to execute a projector color correcting method, said method comprising:

a color conversion generation step for generating a color conversion for each pixel or block of an image projected onto a projection  
5 plane based on previously set first color information and second color information of the image projected onto the projection plane; and

a color correction step for correcting the input image for colors on a pixel-by-pixel or block-by-block basis using the color conversion.

[18] The program according to claim 17, wherein said color conversion generation step comprises:

an input step for receiving input through a user interface; and  
a conversion step for converting the color conversion based on  
5 the input.

[19] The program according to claim 18, wherein said color conversion generation step comprises:

a color information acquisition step for acquiring the second color information as color information for each pixel or block of the image on the  
5 projection plane; and

a color conversion calculation step for calculating a color conversion for each pixel or block of the image based on the first color information and the second color information.

[20] The program according to claim 19, wherein said color conversion generation step comprises:

an association step for projecting the image onto the projection plane, and capturing the image to acquire a captured image for establishing  
5 an association between pixels or blocks of the image and pixels or blocks of the captured image;

a color information acquisition step for acquiring the second color information as color information for each pixel or block of the captured image;  
and

10 a color conversion calculation step for calculating a color conversion for each pixel or block of the image based on the first color information, the second color information, and said association.

[21] The program according to claim 20, wherein said color conversion generation step comprises:

an association step for projecting a pattern image onto the projection plane, and capturing the pattern image to acquire a captured  
5 pattern image for establishing an association of pixels or blocks of the pattern image with pixels or blocks of the captured pattern image;

a color information acquisition step for projecting a color image onto the projection plane, capturing the color image to acquire a captured color image, and acquiring the second color information as color information  
10 for each pixel or block of the captured color image; and

a color conversion calculation step for calculating a color conversion for each pixel or block of the color image based on the first color information, the second color information, and said association.

[22] The program according to claim 20, including presenting a plurality of the images or the pattern images, acquiring an associated captured image as a captured image associated with the plurality of images, and scanning the associated captured image to establish an association of  
5 the pixel or block of the image or pattern image with the pixels or blocks of the captured image or captured pattern image.

[23] The program according to claim 22, wherein said color conversion generation step comprises:

a feature point association step for projecting a pattern image onto the projection plane, capturing the pattern image to acquire a captured  
5 pattern image for establishing an association of feature points of the pattern image with feature points of the captured pattern image;

a feature point color information acquisition step for projecting a color image onto the projection plane, capturing the color image to acquire a captured color image, and acquiring the second color information as color  
10 information on the feature points of the captured color image;

a feature point color conversion calculation step for calculating a

color conversion for the feature points of the color image from the previously set first color information, the second color information, and said association; and

- 15                    a color conversion calculation step for calculating a color conversion for each pixel or block of the input image by using the color conversion for the feature points as a color conversion for representative points.

[24]            The program according to claim 17, wherein said color conversion comprises an equation or a lookup table or a combination thereof.